CLAIMS

What is claimed is:

1. A method of determining an amount of bandwidth needed on a link, the method comprising:
determining, based on user behavior and traffic characteristics, said amount; and
storing said amount in memory.

2. The method of Claim 1, wherein said user behavior comprises an average time between arrivals of calls made by one or more users using said link.

3. The method of Claim 1, wherein said user behavior comprises an average duration of calls made by one or more users using said link.

4. The method of Claim 1, wherein said traffic characteristics comprise an average time between arrivals of packets on said link.

5. The method of Claim 1, wherein said traffic characteristics comprise an average duration of periods during which packets are transmitted relatively continuously on said link.

6. The method of Claim 1, wherein determining said amount is based on a specified number of users.

7. The method of Claim 1, wherein determining said amount is based on a grade of service (GoS) factor.

8. The method of Claim 1, wherein determining said amount is based on a quality of service (QoS) factor.

9. The method of Claim 1, wherein determining said amount is based on a specified maximum call blocking probability requirement.

10. The method of Claim 1, wherein determining said amount is based on a specified maximum packet loss probability requirement.

11. The method of Claim 1, wherein determining said amount is based on a probability that a specified number of users are using said link when a specified maximum call blocking probability requirement is satisfied relative to said link.

12. The method of Claim 1, wherein determining said amount is based on a probability that a packet will be lost when said packet is sent through a link that:
has a specified amount of bandwidth; and
is being used by a specified number of users.

13. The method of Claim 1, wherein determining said amount is based on a product of:
a probability that a specified number of users are using said link when a specified maximum call blocking probability requirement is satisfied relative to said link; and
a probability that a packet will be lost when said packet is sent through a link that:
has a specified amount of bandwidth; and
is being used by said specified number of users.

14. A method of determining an amount of bandwidth needed on a link, the method comprising the steps of:
determining a first probability that a first specified number of users are using said link when a specified maximum call blocking probability requirement is satisfied relative to said link;
determining a second probability that a second specified number of users are using said link when said specified maximum call blocking probability requirement is satisfied relative to said link;
determining a third probability that a packet will be lost when said packet is sent through a link that:
has a specified amount of bandwidth; and
is being used by said first specified number of users;
determining a fourth probability that said packet will be lost when said packet is sent through a link that:
has said specified amount of bandwidth; and

is being used by said second specified number of users;

determining a first product of said first probability and said third probability;

determining a second product of said second probability and said fourth probability;

determining a sum of at least said first product and said second product;

determining whether said sum is greater than a specified maximum packet loss probability requirement; and

if said sum is not greater than said specified maximum packet loss probability requirement, then storing said specified amount of bandwidth in memory as said amount of bandwidth needed.

15. The method of Claim 14, wherein said steps further comprise:

if said sum is greater than said specified maximum packet loss probability requirement, then:

incrementing said specified amount of bandwidth; and

repeating said steps.

16. The method of Claim 1, wherein said third probability is based on an average duration of periods in which packets are transmitted relatively constantly during a call.

17. The method of Claim 1, wherein said third probability is based on an average duration of periods during which packets are not transmitted during a call.

18. The method of Claim 1, wherein said third probability is based on a rate at which packets are transmitted during periods in which packets are transmitted relatively constantly during a call.

19. The method of Claim 1, wherein said third probability is based on a size of a buffer associated with a link.

20. A computer-readable medium carrying one or more sequences of instructions for determining an amount of bandwidth needed on a link, which instructions, when executed by one or more processors, cause the one or more processors to carry out the steps of:

determining, based on user behavior and traffic characteristics, said amount; and

storing said amount in memory.

21. The computer-readable medium of Claim 20, wherein said user behavior comprises an average time between arrivals of calls made by one or more users using said link.

22. The computer-readable medium of Claim 20, wherein said user behavior comprises an average duration of calls made by one or more users using said link.

23. The computer-readable medium of Claim 20, wherein said traffic characteristics comprise an average time between arrivals of packets on said link.

24. The computer-readable medium of Claim 20, wherein said traffic characteristics comprise an average duration of periods during which packets are transmitted relatively continuously on said link.

25. The computer-readable medium of Claim 20, wherein determining said amount is based on a specified number of users.

26. The computer-readable medium of Claim 20, wherein determining said amount is based on a grade of service (GoS) factor.

27. The computer-readable medium of Claim 20, wherein determining said amount is based on a quality of service (QoS) factor.

28. The computer-readable medium of Claim 20, wherein determining said amount is based on a specified maximum call blocking probability requirement.

29. The computer-readable medium of Claim 20, wherein determining said amount is based on a specified maximum packet loss probability requirement.

30. The computer-readable medium of Claim 20, wherein determining said amount is based on a probability that a specified number of users are using said link when a specified maximum call blocking probability requirement is satisfied relative to said link.

31. The computer-readable medium of Claim 20, wherein determining said amount is based on a probability that a packet will be lost when said packet is sent through a link that: has a specified amount of bandwidth; and

is being used by a specified number of users.

32. The computer-readable medium of Claim 20, wherein determining said amount is based on a product of:

a probability that a specified number of users are using said link when a specified maximum call blocking probability requirement is satisfied relative to said link; and

a probability that a packet will be lost when said packet is sent through a link that:

has a specified amount of bandwidth; and

is being used by said specified number of users.

33. An apparatus for determining an amount of bandwidth needed on a link, comprising:

means for determining, based on user behavior and traffic characteristics, said amount; and

means for storing said amount in memory.

34. The apparatus of Claim 33, wherein said user behavior comprises an average time between arrivals of calls made by one or more users using said link.

35. The apparatus of Claim 33, wherein said user behavior comprises an average duration of calls made by one or more users using said link.

36. The apparatus of Claim 33, wherein said traffic characteristics comprise an average time between arrivals of packets on said link.

37. The apparatus of Claim 33, wherein said traffic characteristics comprise an average duration of periods during which packets are transmitted relatively continuously on said link.

38. The apparatus of Claim 33, wherein determining said amount is based on a specified number of users.

39. The apparatus of Claim 33, wherein determining said amount is based on a grade of service (GoS) factor.

40. The apparatus of Claim 33, wherein determining said amount is based on a quality of service (QoS) factor.

41. The apparatus of Claim 33, wherein determining said amount is based on a specified maximum call blocking probability requirement.

42. The apparatus of Claim 33, wherein determining said amount is based on a specified maximum packet loss probability requirement.

43. The apparatus of Claim 33, wherein determining said amount is based on a probability that a specified number of users are using said link when a specified maximum call blocking probability requirement is satisfied relative to said link.

44. The apparatus of Claim 33, wherein determining said amount is based on a probability that a packet will be lost when said packet is sent through a link that:
has a specified amount of bandwidth; and
is being used by a specified number of users.

45. The apparatus of Claim 33, wherein determining said amount is based on a product of:
a probability that a specified number of users are using said link when a specified maximum call blocking probability requirement is satisfied relative to said link; and
a probability that a packet will be lost when said packet is sent through a link that:
has a specified amount of bandwidth; and
is being used by said specified number of users.

46. An apparatus for determining an amount of bandwidth needed on a link, comprising:
a network interface that is coupled to a data network for receiving one or more packet flows therefrom;
a processor; and
one or more stored sequences of instructions which, when executed by the processor, cause the processor to carry out the steps of:
determining, based on user behavior and traffic characteristics, said amount; and

storing said amount in memory.

47. The apparatus of Claim 46, wherein said user behavior comprises an average time between arrivals of calls made by one or more users using said link.

48. The apparatus of Claim 46, wherein said user behavior comprises an average duration of calls made by one or more users using said link.

49. The apparatus of Claim 46, wherein said traffic characteristics comprise an average time between arrivals of packets on said link.

50. The apparatus of Claim 46, wherein said traffic characteristics comprise an average duration of periods during which packets are transmitted relatively continuously on said link.

51. The apparatus of Claim 46, wherein determining said amount is based on a specified number of users.

52. The apparatus of Claim 46, wherein determining said amount is based on a grade of service (GoS) factor.

53. The apparatus of Claim 46, wherein determining said amount is based on a quality of service (QoS) factor.

54. The apparatus of Claim 46, wherein determining said amount is based on a specified maximum call blocking probability requirement.

55. The apparatus of Claim 46, wherein determining said amount is based on a specified maximum packet loss probability requirement.

56. The apparatus of Claim 46, wherein determining said amount is based on a probability that a specified number of users are using said link when a specified maximum call blocking probability requirement is satisfied relative to said link.

57. The apparatus of Claim 46, wherein determining said amount is based on a probability that a packet will be lost when said packet is sent through a link that:

has a specified amount of bandwidth; and

is being used by a specified number of users.

58. The apparatus of Claim 46, wherein determining said amount is based on a product of:

a probability that a specified number of users are using said link when a specified maximum call blocking probability requirement is satisfied relative to said link; and

a probability that a packet will be lost when said packet is sent through a link that:

has a specified amount of bandwidth; and

is being used by said specified number of users.